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State of Illinois  
Rod R. Blagojevich, Governor



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# Guide To Career Choices

## Scientific Research & Engineering

*A brief look at:*

- jobs
- education and training requirements
- wages
- outlook

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[www.ILWorkInfo.com](http://www.ILWorkInfo.com)

# scientific research & engineering

guide no. 15

ENTRY : the mean (average) of the bottom third of wages in an occupation  
 MEDIAN : half of the workers in the occupation earn more than this wage; half earn less  
 EXPERIENCED : the mean of the top two-thirds of wages in an occupation

HS : High School diploma or equivalent

AD : Associate Degree of Arts/Science  
 community college, 2 years

BA/BS : Bachelor of Arts/Science degree  
 colleges/universities, 4 years

Career Opportunities	OUTLOOK		ANNUAL WAGES			Education & Training
	2014 Employment	Annual Openings	Entry	Median	Experienced	
Mechanical Engineers	10,579	346	\$44,657	\$65,469	\$78,521	BS in engineering is the general entry requirement. A degree in mathematics or physical science may be considered.
Engineering Managers	8,405	220	\$66,726	\$90,655	\$107,978	BA/BS in field and/or background in computer science or engineering. Intensive in-house training is provided.
Industrial Engineers	7,974	262	\$46,552	\$63,735	\$76,001	BS in engineering is required by most employers. Familiarity with math, science, English, and social studies is recommended.
Civil Engineers	7,658	196	\$47,609	\$66,961	\$80,906	BS in engineering is usually required. In some instances, a degree in mathematics or a physical science is accepted.
Electronics Engineers, Except Computer	6,485	117	\$47,432	\$69,759	\$83,158	BA/BS in electrical engineering is the minimum requirement; Master's degree in area of specialty is helpful. New graduates work under the guidance of experienced engineers.
Electrical Engineers	6,335	167	\$50,135	\$70,210	\$85,202	BS in engineering is required by most employers. A degree in mathematics or physical science may be accepted.
Weighers, Measurers, Checkers, & Samplers	3,167	97	\$17,668	\$26,002	\$32,263	HS; short-term on-the-job training under close supervision.
Chemists	2,835	94	\$39,772	\$54,162	\$67,660	BA/BS in an area of science and at least a master's degree in chemistry. Ph.D. necessary to lead research projects.
Chemical Technicians	2,048	54	\$29,434	\$38,754	\$47,636	At least two years training or AD in science or a science-related technology. Short-term on-the-job training preferred.
Environmental Science & Protection Technicians	1,858	46	\$20,210	\$34,246	\$45,272	At least an AD in science or a science-related technology or at least two years training. Short- term on-the-job training under supervision of a scientist or a more experienced technician.
Materials Engineers	1,052	40	\$49,511	\$65,757	\$81,146	BA/BS in materials engineering. Some jobs require a master's degree or Ph.D. New graduates work under the guidance of experienced engineers.

Occupational growth rates and job opening data are based on All-Industry projections through the year 2014.

Wage data cover full-time, part-time and seasonal employees but exclude temporary and contractual workers. Wages include commissions and cost-of-living allowances, but exclude overtime and tips.

# *Job Descriptions*

## *Engineering Managers*

Plan, direct, or coordinate activities in such fields as architecture and engineering or research and development in these fields.

## *Civil Engineers*

Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, and pipelines.

## *Electrical Engineers*

Design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use.

## *Electronics Engineers, Except Computer*

Research, design, develop, and test electronic components and systems for commercial, military, or scientific use utilizing knowledge of electronic theory and materials properties.

## *Industrial Engineers*

Design, develop, test, and evaluate integrated systems for managing industrial production processes including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination.

## *Materials Engineers*

Evaluate materials and develop machinery and processes to manufacture materials for use in products that must meet specialized design and performance specifications.

## *Mechanical Engineers*

Perform engineering duties in planning and designing tools, engines, machines, and other mechanical equipment.

## *Chemists*

Conduct qualitative and quantitative chemical analyses or chemical experiments in laboratories for quality or process control or to develop new products or knowledge.

## *Chemical Technicians*

Conduct chemical and physical laboratory tests to assist scientists in making qualitative and quantitative analyses of solids, liquids, and gaseous materials.

## *Environmental Science & Protection Technicians*

Performs laboratory and field tests to monitor the environment and investigate sources of pollution, including those that affect health.

## *Weighers, Measurers, Checkers, & Samplers*

Weigh, measure, and check materials, supplies, and equipment for the purpose of keeping relevant records.

# What is the job outlook?

Employment in the scientific research and engineering industries is expected to increase at the average rate through 2014. Engineers will be needed to constantly monitor and make improvements to aging infrastructures such as bridges, highways, and other public facilities. Employers will rely more heavily on engineers to further increase productivity rates as they increase investment in plant and equipment. Most of the job openings will be for replacement workers in the engineering occupations, especially industrial and mechanical engineers. Moderate employment demand is anticipated for civil and electronic engineers. Job prospects for physical and life scientists, such as chemists, will be limited to replacing retiring workers.

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## Where can I find more information?

The Illinois Department of Employment Security offers a wealth of information concerning the Illinois labor market. Visit [www.ILWorkInfo.com](http://www.ILWorkInfo.com) to find out more about:

### **Career Planning: Illinois Career Resource Network**

1-877-513-1987

[des.icrn@illinois.gov](mailto:des.icrn@illinois.gov)

### **Labor Market Information: LMI Source**

1-866-ONE-SRCE (1-866-663-7723)

[des.lmi@illinois.gov](mailto:des.lmi@illinois.gov)

### **Workforce Information: Workforce Info Center**

[des.workinfo@illinois.gov](mailto:des.workinfo@illinois.gov)

For assistance with employment and training issues, contact your local Illinois Employment and Training Center. Call 1-888-367-4382 to find the location nearest you.



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Career Guide Sources:  
Illinois Department of Employment Security's  
"Occupational Projections" and "Occupational  
Employment Statistics Wage Data" and the U.S. Bureau  
of Labor Statistics' "Occupational Outlook Handbook."